THE STATE OF WYOMING

JIM GERINGER
GOVERNOR

Department of Environmental Quality

250 Lincoln Street ● Lander, Wyoming 82520-2848 ● Fax (307) 332-7726

ABANDONED MINES (307) 332-5085	AIR QUALITY (307) 332-6755	LAND QUALITY (307) 332-3047	SOLID & HAZARDOUS WASTE (307) 332-6924	WATER QUALITY (307) 332-3144

December 4, 1996

David Gaige, Air Leader
Woodward-Clyde Consultants
Stanford Place 3, Suite 1000
4582 South Ulster Street
Denver, Colorado 80237

Dear David:

As I promised during our November 22nd Cheyenne meeting, please find enclosed a copy of my December 4, 1996 memo on the status of trona plants' particulate PSD status. I am also enclosing copies of the latest emission tables for all of the trona plants, which documents all the allowable particulate, NO_x and SO_2 emissions from the facilities. I hope this provides the information you need to work on Solvay's permit application. If there are questions, or if you need additional information, please feel free to contact me.

Sincerely,

Lee Gribovicz, P.E.
District Air Quality Engineer

cc: Dolly A. Potter, Environmental Manager
Solvay Minerals Incorporated
P.O. Box 1167
Green River, WY 82935

MEMORANDUM

To: Trona Plant Files

Through: Chuck Collins, Air Quality Administrator
Bernie Dailey, Air Quality Supervisor

From: Lee Gribovicz, District Air Quality Engineer

Subject: Particulate PSD Status

Date: December 4, 1996

I have compiled the particulate PSD status of the five current trona plants (FMC, Gen-Chem, OCI, Solvay, Texasgulf) in this memo. The status is discussed for each of the facilities as of this date, in the following sections.

FMC

As of this writing, the latest FMC PSD particulate permit is CT-1187, issued for construction of the Mono-12 Loadout Baghouse in November '96. After the 1977 effective date of the PSD regulations, FMC also received permit CT-827 for a sodium bicarbonate plant in March '89; MD-120 for a mono dual ore crusher system in March '90, CT-1045 for their mine water plant in September '93, and CT-1134 for a new sesqui fluid bed dryer in March '95.

Under CT-827 FMC added 20.59 TPY of particulate to the Green River plant, and they added another 13.14 TPY emissions to the plant under MD-120. The net PSD increase under the original CT-1045 permit was 12.93 TPY, but the size of three emission points (MW-1, 2 & 4) was subsequently adjusted, resulting in a total reduction of 2.68 pph particulate allowable emission rate (11.74 TPY). Thus the actual PSD increment consumption under CT-1045 was only 1.19 TPY. The net increase under CT-1134 was 1.55 TPY, and the CT-1187 particulate increase was 7.54 TPY. Thus as shown in Table A, the net PSD increase for FMC additions to the plant from all applicable permits now totals to 44.01 TPY of particulate. These emission additions are the only modifications undertaken by FMC since the effective date of the PSD regulations (8/7/77) which haven't been accompanied by a totally offsetting "contemporaneous decrease" in emissions. Therefore, these emissions represent the total PSD particulate increment consumption at the FMC plant to date.

General Chemical

As of this writing, the latest General Chemical permit dealing with particulate is MD-129A, issued for debottlenecking their Green River plant in January '96. The original MD-129 permit considered a new dryer, identified as IE-1, but that source was never built. The revised permit allowed construction of the GR-3-Q dryer (completed), with an allowable emission rate of 1.5 pph (6.57 TPY). After the 1977 effective date of the PSD regulations, General Chemical also received modification permit MD-121 for a replacement crusher at GR-3-A in March '90; a waiver for FD-617 bulk truck loadout baghouse in September '90, permit MD-198 for revision of the GR-1-B(1) product loadout system in May '94, a waiver for the reconstruction of CH-1 coal

handling baghouse in October '95, and a waiver for the crusher replacement and reconstruction of baghouses GR-1-A, GR-3-A and A-305 in the crusher building in December '95.

Under MD-121/OP-227 General Chemical simply replaced the GR-III crusher, while the existing GR-3-A baghouse had its allowable reduced from 3.0 to 2.5 pph. Thus the source was an existing emission point prior to the effective date for PSD applicability and the emissions do not consume increment. The September '90 bulk truck loadout waiver for the FD-617 baghouse added 0.23 pph, or 1.01 TPY, even though there was an unquantified reduction in fugitive emissions from this project. Under MD-198 the rail loadout was modified and GR-1-B(1) baghouse reconstructed, but the baghouse had its allowable reduced from 2.28 to 1.39 pph under this action. As above, this source was an existing emission point prior to the effective date for PSD applicability and the emissions do not consume increment. No emission changes were associated with the waivers for the CH-1 or the crusher baghouses reconstruction. And as noted above, under MD-129/MD-129A, there was a 6.57 TPY particulate increase with the installation of GR-3-Q. Thus as shown in Table B, the net PSD increase for General Chemical additions to the plant from all applicable permits now totals to 7.58 TPY of particulate. These emission additions are the only modifications undertaken by General Chemical since the effective date of the PSD regulations (8/7/77), therefore these emissions represent the total PSD particulate increment consumption at the General Chemical plant to date.

OCI

As of this writing, the latest particulate OCI PSD permit is MD-271, issued for adjusting the instantaneous maximum throughput rate of 5ES-10 calciner, in May '96. After the 1977 effective date of the PSD regulations, OCI also has received permit CT-251 (OP-98) for surface facilities associated with a second plant mine shaft in September '79; permit MD-96 (OP-225) for a new Unit 5 crusher system in January '89, and permit MD-133 (OP-256) for debottlenecking modifications in December '90.

Under CT-251 OCI constructed three point sources (DC-36, 37 and 38) which added 16.34 TPY of particulate (original DC-36 allowable reduced under MD-133 from 1.0 to 0.73 pph) to the Big Island plant. The 2.80 TPY added with construction of the DC-19 baghouse under MD-96 (original DC-19 allowable reduced under MD-133 from 0.7 to 0.64 pph), was offset by an approximate equal reduction from control of former fugitive emissions at that site. The net increase under the MD-133 permit was 5.21 TPY from DC-100 (original allowable of 3.12 pph was subsequently adjusted down to 1.19 pph in OP-256 to reflect the reduced volume of the final system design). There were no particulate emission changes included in MD-271, therefore as shown in Table C, the net PSD increase for OCI additions to the plant from all applicable permits now totals to 21.55 TPY of particulate. These emission additions are the only modifications undertaken by OCI since the effective date of the PSD regulations (8/7/77) which haven't been accompanied by a totally offsetting

"contemporaneous decrease" in emissions. Therefore, these emissions represent the total PSD particulate increment consumption at the OCI plant to date.

Solvay

Because this plant was not constructed until 1982, after the 1977 effective date of the PSD regulations, all of the emissions from the facility consume PSD increment. As of this writing, permits that Solvay has received include CT-234/234A/234A2 (OP-154) issued for the initial one million TPY soda ash plant, CT-643/643A (OP-181) issued for construction of the Alkaten production facility, CT-946 issued for a calcined trona project (project was mostly abandoned), MD-117 issued for a caustic/sodium sulfite production facility and a new fluid bed soda ash drier, MD-132 issued for the construction of the third "C" soda ash product line, and MD-229 issued for conversion of the "A" & "B" trona calciners to gas firing. The latest particulate permit Solvay has is MD-282, issued for construction of a meta-bisulfite production facility, in May '96.

The MD-282 permit analysis provides an updated analysis of the PSD particulate status for the Solvay Green River plant. That permit shows 481.51 TPY of particulate emissions permitted from the plant, therefore these emissions represent the total PSD particulate increment consumption at the Solvay plant to date. As shown in Table D, the plant currently has 0.98 TPY of particulate that has not yet been modeled for increment consumption since the last analysis which was conducted for CT-946. When Solvay next completes a "major modification" such that the cumulative total of 15 TPY PM_{10} (or 25 TPY TSP) is exceeded, they will be required to remodel their entire plant particulate emissions for determining compliance with PSD increments.

Texasgulf

As of this writing, the latest particulate Texasgulf permit is MD-230, issued for adjusting the instantaneous maximum throughput rate of the two plant calciners, in June '95. After the 1977 effective date of the PSD regulations, Texasgulf also has received permit CT-508/508A (OP-165) for construction of a fluid bed dryer in August '83; permit MD-69 (OP-222) for debottlenecking modifications in May '87; CT-945 (OP-255) for construction of a caustic soda production facility in September '91; and permit MD-177 issued for conversion of their two trona calciners to gas firing in September '92.

Under CT-508/508A Texasgulf constructed source #24, a fluid bed dryer, which added 4.38 TPY of particulate when it had its allowable raised to 1.00 pph under the CT-508A amendment. Under MD-69, Texasgulf raised the plant capacity to 1.3 MM TPY with debottlenecking activities, but they retained existing allowable emission limits for all existing sources. The original proposal included additional emission points for a cooler and a bulk truck loadout, but Texasgulf subsequently decided that neither of these new point sources were necessary. Consequently MD-69 had no additional emissions associated with it. The net particulate increase under the CT-945 permit was originally higher

(5.30 TPY), but dropped to 4.82 TPY in the operating permit as Texasgulf eliminated plans for a carbon regenerator incinerator (0.11 pph) in the final system design. There were no particulate emission changes included in permits MD-177 or MD-230, as Texasgulf retained the existing allowable emission limits for both the calciner gas conversion and the instantaneous throughput increase for these kilns. Therefore as shown in Table E, the net PSD increase for Texasgulf additions to the plant from all applicable permits now totals to 9.20 TPY of particulate. These emission additions are the only modifications undertaken by Texasgulf since the effective date of the PSD regulations (8/7/77) which haven't been accompanied by a totally offsetting "contemporaneous decrease" in emissions. Therefore, these emissions represent the total PSD particulate increment consumption at the Texasgulf plant to date.

Table A: FMC PSD Net Emissions Changes (Particulate TPY)						
Source	Average Actual Emissions		Permitted Emission		Net Change	
	2 Year Avg	Record Year	Existing	Modified	Permitted	Actual
Contemporaneous Decreases						
RA-24 A&B (CT-1045)	90.96	'90-91	197.10	43.80	-153.30	-47.16
RA-14 (CT-1134)	0.34	'92-93	17.52	0.00	-17.52	-0.34
PP-25 (CT-1134)	28.24	'92-93	65.70	15.02	-50.68	-13.22
Mono-7 (CT-1187)	4.85	'93-94	8.76	0.00	-8.76	-4.85
Mono-9 (CT-1187)	6.18	'93-94	8.76	6.61	-2.15	0.43
Total Decreases	130.57	n.a.	297.84	65.43	-232.41	-65.14
PSD Increases						
CT-827 Additions	n.a.	n.a.	20.59	20.59	0.00	20.59
MD-120 Additions	n.a.	n.a.	13.14	13.14	0.00	13.14
CT-1045 Additions	n.a.	n.a.	n.a.	60.09	60.09	60.09
CT-1045 Adjustments	n.a.	n.a.	n.a.	-11.74	-11.74	-11.74
CT-1134 Additions	n.a.	n.a.	n.a.	15.11	15.11	15.11
CT-1187 Additions	n.a.	n.a.	n.a.	11.96	11.96	11.96
Total Increases	0.00	n.a.	33.73	109.15	75.42	109.15
Subtotal, Increment Consuming Emissions					-156.99	44.01
Emissions Considered in Previous Increment Analyses (MD-120 Permit)						33.73
Current Net Emissions Change (since last PSD Analysis)						10.28

Table B: General Chemical PSD Net Emissions Changes (Particulate TPY)						
Source	Average Actual Emissions		Permitted Emission		Net Change	
	2 Year Avg	Record Year	Existing	Modified	Permitted	Actual
Contemporaneous Decreases						
None Documented	0.00	n.a.	0.00	0.00	0.00	0.(
Total Decreases	0.00	n.a.	0.00	0.00	0.00	0.00
PSD Increases						
9/90 Waiver (FD-617)	n.a.	n.a.	0.00	1.01	1.01	1.01
MD-129A (GR-3-Q)	n.a.	n.a.	0.00	6.57	6.57	6.57
Total Increases	0.00	n.a.	0.00	7.58	7.58	7.58
Subtotal, Increment Consuming Emissions					7.58	7.58
Emissions Considered in Previous Increment Analyses (None Completed)						0.00
Current Net Emissions Change (since last PSD Analysis)						7.58

Table C: OCI PSD Net Emissions Changes (Particulate TPY)						
Source	Average Actual Emissions		Permitted Emission		Net Change	
	2 Year Avg	Record Year	Existing	Modified	Permitted	Actual
Contemporaneous Decreases						
Fugitive (MD-96)	2.80	'87-88	2.80	0.00	-2.80	-2.80
Total Decreases	2.80	n.a.	2.80	0.00	-2.80	-2.80
PSD Increases						
CT-251 (DC-36,37,38)	n.a.	n.a.	0.00	16.34	16.34	16.34
MD-96 (DC-19)	n.a.	n.a.	0.00	2.80	2.80	2.80
MD-133 (DC-100)	n.a.	n.a.	0.00	5.21	5.21	5.21
Total Increases	0.00	n.a.	0.00	24.35	24.35	24.35
Subtotal, Increment Consuming Emissions					21.55	21.55
Emissions Considered in Previous Increment Analyses (MD-120 Permit)						0.00
Current Net Emissions Change (since last PSD Analysis)						21.55

Table D: Solvay PSD Net Emissions Changes (Particulate TPY)						
Source	Average Actual Emissions		Permitted Emission		Net Change	
	2 Year Avg	Record Year	Existing	Modified	Permitted	Actual
Contemporaneous Decreases						
AQD #12,23&29 (MD-282)	2.05	'93-94	7.01	0.00	-7.01	-2.05
AQD #17 (MD-282)	114.54	'93-94	134.47	97.67	-36.80	-16.87
Total Decreases	116.59	n.a.	141.48	97.67	-43.81	-18.92
PSD Increases						
MD-282	n.a.	n.a.	0.00	19.90	19.90	19.90
Total Increases	0.00	n.a.	0.00	19.90	19.90	19.90
Current Net Emissions Change (since last PSD Analysis) {CT-946 Permit}					-23.91	0.98

Table E: Texasgulf PSD Net Emissions Changes (Particulate TPY)						
Source	Average Actual Emissions		Permitted Emission		Net Change	
	2 Year Avg	Record Year	Existing	Modified	Permitted	Actual
Contemporaneous Decreases						
None Documented	0.00	n.a.	0.00	0.00	0.00	0.00
Total Decreases	0.00	n.a.	0.00	0.00	0.00	0.00
PSD Increases						
CT-508/508A	n.a.	n.a.	0.00	4.38	4.38	4.38
CT-945	n.a.	n.a.	0.00	4.82	4.82	4.82
Total Increases	0.00	n.a.	0.00	9.20	9.20	9.20
Subtotal, Increment Consuming Emissions					9.20	9.20
Emissions Considered in Previous Increment Analyses (None Completed)						0.00
Current Net Emissions Change (since last PSD Analysis)						9.20

TABLE I

Texasgulf Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Name	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Current Plant Emission Sources"			
1	Trona Transfer Tower	1.03	-	-
3	Ore Screening & Crushing	2.14	-	-
4	#1 Ore Calciner	15.80	3.00	140.00
5	#2 Ore Calciner	15.80	3.00	140.00
7	#1 Product Dryer	3.94	-	-
8	#2 Product Dryer	3.94	-	-
9	#1 Product Sizing	2.57	-	-
10	#2 Product Sizing	2.57	-	-
11	Product Handling Dust Control	2.57	-	-
12	Product Storage Dust Control	2.57	-	-
13	Railcar Loadout Dust Control	1.31	-	-
14	#1 Coal Boiler	35.85	71.70	250.95
15	#2 Coal Boiler	35.85	71.70	250.95
16	Boiler Ash Dust Control	0.43	-	-
17	Vacuum Sweeping System	0.44	-	-
18	Mine Skip Unloading	1.33	-	-
22	Perlite Unloading Bin	0.07	-	-
23	Lime Silo #1	0.07	-	-
24	Fluid Bed Dryer	1.00	-	-
27	Lime Silo #2	0.07	-	-
C-1	Caustic Plant Boiler	-	-	28.00
C-3	Lime Silo/Feed Bin Vents	0.67	-	-
C-4	Lime Slaker Vent	0.43	-	-
	Total, Current Plant Sources	130.45 (571.4 TPY)	149.40 (654.4 TPY)	809.96 (3547.6 TPY)
	"Calciner Changes"			
4	#1 Ore Calciner coal burners (remove)		-3.00	-140.00
5	#2 Ore Calciner coal burners (remove)		-3.00	-140.00
4	#1 Ore Calciner gas burners (add)		0.00	30.00
5	#2 Ore Calciner gas burners (add)		0.00	30.00
	Total, Calciner Changes	0.00 (0.0 TPY)	-6.00 (-26.3 TPY)	-220.00 (-963.6 TPY)
	Grand Total, Plant Emissions	130.45 (571.4 TPY)	143.40 (628.1 TPY)	589.96 (2584.0 TPY)

TABLE I

FMC Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Description	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Current Plant Point Emission Sources"			
PA-4	sesqui hammermill	1.25	-	-
PA-5	sesqui ore screen	1.25	-	-
PA-6	sesqui dissolver vent #1	1.00	-	-
PA-7	sesqui dissolver vent #2	1.00	-	-
PA-8	sesqui dissolver vent #3	1.00	-	-
PA-9	sesqui dissolver vent #4	1.00	-	-
RA-1	"baby" sesqui calciner	10.00	-	2.55*
RA-15	sesqui steam tube calciner R-1	# -	-	
RA-16	sesqui steam tube calciner R-7	4.00	-	-
RA-22	sesqui gas fired calciner R-9	32.00	-	7.98*
RA-23	sesqui gas fired calciner R-13	35.00	-	11.40*
RA-24	sesqui gas fired calciner R-15	10.00	-	15.96*
RA-25	sesqui fluid bed calciner R-5	26.50	-	-
RA-26	sesqui fluid bed calciner R-6	12.00	-	-
RA-28	sesqui bagging operation	1.29	-	-
RA-29	sesqui fluid bed calciner	3.45	-	-
RA-33	sesqui storage silo	3.00	-	-
PP-11	STPP phosphorus furnace #2	11.00	-	0.18*
PP-12	STPP phosphorus furnace #1	11.00	-	0.18*
PP-20	STPP rotary dryer	5.00	-	7.49*
PP-21	STPP spray dryer	15.00	-	3.36*
PP-24	STPP high density screening	3.60	-	-
PP-25	STPP secondary calciner	3.43	-	1.22*
PP-26	STPP medium density screening	0.90	-	-
PP-27	STPP light density screening	0.00	-	-
PP-28	STPP product sizing	4.00	-	-
MONO-1	mono dissolver	0.53	-	-
MONO-2	mono primary crusher	2.60	-	-
MONO-3	mono ore distribution	1.30	-	-
MONO-4	mono secondary crusher #1	2.00	-	-
MONO-5	mono calciner #1	53.00	-	20.63*
MONO-6	mono fluid bed dryer #1	20.00	-	-
MONO-8	mono stockpile reclaim #1	1.90	-	-
MONO-9	mono bulk railcar loadout	1.51	-	-
MONO-10	mono bulk truck loadout	1.70	-	-
MONO-11	mono stockpile reclaim #2	3.00	-	-
MONO-12	mono screening & loadout	2.73	-	-
NS-2A	mono powerhouse coal receiving	0.25	-	-
NS-2B	mono powerhouse coal receiving	0.25	-	-
NS-3	mono calciner #2	41.00	-	41.40*
NS-4	mono scondary crusher #2	1.00	-	-
NS-5	mono disolver #2	2.70	-	-
NS-6	mono fluid bed dryer #2	20.00	-	-
NS-7	mono plant coal receiving	0.50	-	-
NS-8	mono plant coal housekeeping	0.50	-	-
NS-9	mono plant coal transfer	0.50	-	-
NS-10	mono powerhouse flyash silo #1	0.34	-	-
NS-11	mono powerhouse flyash silo #2	0.34	-	-

(continued next page)

TABLE I (continued)
FMC Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Description		Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
RD-2	solution mining lime storage bin		1.50	-	-
RD-3	solution mining lime slaker		1.00	-	-
SM-1	solution mining lime kiln		14.00	9.60	32.40
SM-2	solution mining coal storage		0.24	-	-
SM-3	solution mining lime storage		0.24	-	-
BC-1	bicarb plant flash dryer		3.00	-	-
BC-2	bicarb plant housekeeping		1.70	-	-
NACN-1	cyanide plant incinerator stack		-	-	28.44
NACN-2	cyanide plant emergency flare		-	-	2.75**
NACN-2	cyanide plant flare pilot lights		-	-	0.06
NACN-3	cyanide plant air preheater		-	-	0.59
MW-1	mine water lime bin vent		0.34	-	-
MW-2	mine water lime slaker		0.19	-	-
MW-3	mine water fluid bed dryer		9.89	-	-
MW-4	mine water product housekeeping		0.62	-	-
MW-5	mine water gas fired boiler		##	-	31.50
NS-1A	mono powerhouse coal boiler #1		45.00	1064.40	620.90
NS-1B	mono powerhouse coal boiler #2		45.00	1064.40	620.90
PH-1A	sesqui powerhouse gas frd boiler	##	-	38.36	
PH-1B	sesqui powerhouse gas frd boiler	##	-	38.36	
PH-2	sesqui powerhouse gas frd boiler	##	-	38.36	
PH-3	sesqui powerhouse gas frd boiler	##	-	76.73	
Total, Current Plant Point Sources			478.04 (2093.8 TPY)	2138.40 (9366.2 TPY)	1641.70 (7190.6 TPY)
	"Current Plant Fugitive Emission Sources"				
Non-Attainment Coal Stockpile			17.46	-	-
Non-Attainment Sesqui Loadout			35.79	-	-
Non-Attainment Mono Stockpile			65.08	-	-
Non-Attainment Sesqui Stockpile			21.91	-	-
Non-Attainment Wind Erosion/Road Dust			36.19	-	-
Truck Hauling Tailpipe Emissions			0.02	-	0.37
Railroad Locomotive Emissions			0.06	-	9.02
Surface Heavy Equipment Emissions			-	-	10.59
Mine Shaft Vents, Underground Exhaust			-	-	2.27
Total, Current Plant Fugitive Sources			176.51 (773.1 TPY)	0.00 (0.0 TPY)	22.25 (97.5 TPY)
Grand Total, All Plant Emissions			654.55 (2866.9 TPY)	2138.40 (9366.2 TPY)	1663.95 (7288.1 TPY)

TABLE I

FMC Soda Ash Plant Pollutant Emission Rates (pph)

"Footnotes"

\# allowable for RA-15 is 4.0 pph, but under the RA-29 fluid bed permit, only one of the two steam tube calciners (RA-15 & RA-16) are allowed to operate at any one time

gas fired boilers have particulate allowables under Wyoming Air Quality Standards & Regulations Section 25, but actual emissions are negligible

* allowable NO_x limit emission rate established per 2/19/93 FMC emission factors

** short term allowable for NACN-2 is 502.28 pph, for start up conditions occuring for no more than 48 hours per year, resulting in 12.06 TPY of NO_x, or 2.75 pph averaged over full year (8760 hours) operation

TABLE I

General Chemical Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Description	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Current Plant Point Emission Sources"			
GR-1-A	GR-I&II crusher	3.00	-	-
GR-1-B1	GR-I&II bulk rail loadout bins	1.39	-	-
GR-1-B2	GR-I&II bulk rail loadout bldg	1.01	-	-
GR-1-C	GR-I&II gas fired calciner #1	15.00	-	8.70
GR-1-D	GR-I&II gas fired calciner #2	15.00	-	8.70
GR-1-E	GR-I&II gas fired calciner #3	15.00	-	8.70
GR-1-F	GR-I&II steam tube dryer #1	4.00	-	-
GR-1-G	GR-I&II steam tube dryer #2	4.00	-	-
GR-1-H	GR-I&II steam tube dryer #3	4.00	-	-
GR-1-J1	GR-I&II product screening	2.00	-	-
GR-1-J2	GR-I&II product screening	2.00	-	-
GR-2-A	GR-I&II ore gallery hskpng	2.95	-	-
GR-2-B	product storage silos #1, 2 & 3	3.00	-	-
GR-2-C	GR-I&II gas fired calciner #4	15.00	-	8.70
GR-2-D	GR-I&II gas fired calciner #5	15.00	-	8.70
GR-2-E1	GR-I&II dissolver vent #1	3.00	-	-
GR-2-E2	GR-I&II dissolver vent #2	3.00	-	-
GR-2-F	GR-I&II steam tube dryer #4	4.00	-	-
GR-2-G	GR-I&II steam tube dryer #5	4.00	-	-
GR-2-H	GR-I&II steam tube dryer #6	4.00	-	-
GR-2-J	GR-I&II product screening	1.50	-	-
GR-2-O	lime storage bin #1	0.08	-	-
GR-3-A	GR-III crusher	2.50	-	-
GR-3-B	GR-III transfer bldg hskpng	1.00	-	-
GR-3-C	GR-III ore gallery hskpng	1.00	-	-
GR-3-D	GR-III gas fired calciner #1	37.90	-	15.06*
GR-3-E	GR-III gas fired calciner #2	37.90	-	15.06*
GR-3-F	GR-III dissolver vent #1	2.00	-	-
GR-3-G	GR-III dissolver vent #2	2.00	-	-
GR-3-H	GR-III filter aid bin vent	0.00	-	-
GR-3-K	GR-III steam tube dryer #1	1.50	-	-
GR-3-L	GR-III steam tube dryer #2	1.50	-	-
GR-3-M	GR-III steam tube dryer #3	1.50	-	-
GR-3-N	GR-III steam tube dryer #4	1.50	-	-
GR-3-O	lime storage bin #2	0.08	-	-
GR-3-P	GR-III steam tube dryer #5	1.50	-	-
GR-3-Q	GR-III steam tube dryer #6	1.50	-	-
GR-3-R	GR-III dryer tank vents	2.00	-	-
GR-3-U	GR-III product screening	3.00	-	-
GR-3-V	GR-III product screening	3.00	-	-
CH-1	coal unloading hskpng	1.70	-	-
CH-2	coal receiving hskpng	1.00	-	-
RO-1	stockpile ore reclaime hskpng	1.40	-	-
A-305	crusher bldg ore screens	1.51	-	-
A-309	stockpile ore reclaim screens	1.28	-	-
FD-120	crusher bldg hskpng	2.00	-	-

(continued next page)

TABLE I (continued)

General Chemical Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Description	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
FD-612	product storage silo #4 vents	1.50	-	-
FD-613	product storage silo #5 vents	0.90	-	-
FD-614	product storage silo #5 reclaim	1.00	-	-
FD-615	product storage silo #4 reclaim	1.00	-	-
FD-616	product loadout transfer bldg	0.80	-	-
FD-617	bulk truck loading station	0.23	-	-
GR-1-O	"A" gas fired boiler	#	-	61.41
GR-1-P	"B" gas fired boiler	#	-	61.41
GR-2-L	"C" coal fired boiler	50.00	640.80	375.90
GR-3-W	"D" coal fired boiler	80.00	1056.00	616.00
Total, Current Plant Point Sources		367.63 (1610.2 TPY)	1696.80 (7432.0 TPY)	1188.34 (5204.9 TPY)
"Current Plant Fugitive Emission Sources"				
Non-Attainment Distressed Area		31.00	-	-
Non-Attainment Trona Stockpile		23.88	-	-
Non-Attainment Coal Stockpile		0.95	-	-
Mine Shaft Diesel Equipment Exhaust		-	-	169.92
Total, Current Plant Fugitive Sources		55.83 (244.5 TPY)	0.00 (0.0 TPY)	169.92 (744.3 TPY)
Grand Total, Current Plant Emissions		423.46 (1854.8 TPY)	1696.80 (7432.0 TPY)	1358.26 (5949.2 TPY)
"Changes Considered In This Analysis"				
GR-1-O	*"A" gas fired boiler (removed)*	#	-	*-61.41*
GR-1-P	*"B" gas fired boiler (removed)*	#	-	*-61.41*
GR-3-X	*"E" gas fired boiler*	#	-	*49.00*
Net, Proposed Plant Changes		*0.00 (0.0 TPY)*	*0.00 (0.0 TPY)*	*-73.82 (-323.3 TPY)*
Grand Total, All Plant Emissions		423.46 (1854.8 TPY)	1696.80 (7432.0 TPY)	1284.44 (5625.9 TPY)

TABLE I

General Chemical Soda Ash Plant Pollutant Emission Rates (pph)

"Footnotes"

gas fired boilers have particulate allowables under Wyoming Air Quality Standards & Regulations Section 25, but actual emissions are negligible

* values are based on maximum tested NO_x emission rates

TABLE I

Solvay Minerals Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Name	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Current Plant Emission Sources"			
2a	Ore Crusher Building Baghouse #1	1.60	n.a.	n.a.
2b	Ore Reclaim Baghouse #1	0.20	n.a.	n.a.
6a	Product Silo Top Baghouse #1	0.30	n.a.	n.a.
6b	Product Silo Reclaim Baghouse #1	1.40	n.a.	n.a.
7	Product Loadout Baghouse #1	1.20	n.a.	n.a.
10	Coal Crushing & Storage Baghouse	0.60	n.a.	n.a.
11	Coal Transfer Station Baghouse	0.60	n.a.	n.a.
14	Boiler Coal Bunker Baghouse	1.00	n.a.	n.a.
15	DR-1 & 2 Product Dryers Scrubber	6.80	n.a.	n.a.
16	Dryer Area Housekeeping Baghouse	0.90	n.a.	n.a.
17	"A" & "B" Gas Fired Ore Calciners	22.30	0.00	20.00
18	#1 Coal Boiler Scrubber & Prcptr	17.00	70.00	245.00
19	#2 Coal Boiler Scrubber & Prcptr	17.00	70.00	245.00
24	Boiler Flyash Silo Vent Baghouse	0.30	n.a.	n.a.
25	Alkaten Crushing Area Baghouse	1.00	n.a.	n.a.
26	DR-3 Alkaten Product Dryer Baghouse	1.10	n.a.	n.a.
27	Alkaten Product Bagging Baghouse	0.50	n.a.	n.a.
28	DR-4 Fld Bed Product Dryer Scrubber	2.90	n.a.	n.a.
30	Caustic #1 Lime Bin Baghouse	0.20	n.a.	n.a.
31	Caustic #2 Lime Bin Baghouse	0.20	n.a.	n.a.
32	Caustic Evaporator Brmtrc Condenser	0.00	n.a.	n.a.
33	Sulfite Sulfur Burner Scrubber	n.a.	0.40	1.50
34	Sulfite Crystallizer	0.00	n.a.	n.a.
35	Sulfite Product Dryer Scrubber	1.40	n.a.	n.a.
36	Sulfite #1 Product Bin Baghouse	0.10	n.a.	n.a.
37	Sulfite #2 Product Bin Baghouse	0.10	n.a.	n.a.
38	Sulfite #3 Product Bin Baghouse	0.10	n.a.	n.a.
39	Sulfite #4 Product Bin Baghouse	0.10	n.a.	n.a.
40	Sulfite Product Bagging Baghouse	0.30	n.a.	n.a.
41	Sulfite Product Loadout Baghouse	0.40	n.a.	n.a.
42	Sulfite HCl Tank Vent	n.a.	n.a.	n.a.
43	Sulfite Sulfur Tank Storage Vent	n.a.	n.a.	n.a.
44	Caustic Lime Delivery Baghouse	0.90	n.a.	n.a.
45	Alkaten Transloading Baghouse	0.20	n.a.	n.a.
46	#2 Ore Transfer Baghouse	1.20	n.a.	n.a.
47	"C" Train Ore Crusher Baghouse	5.10	n.a.	n.a.
48	"C" Ore Calciner Precipitator	9.30	n.a.	30.60
49	"C" Train Train Dissolver Scrubber	0.00	n.a.	n.a.
50	"C" Train Dryer Area Baghouse	2.10	n.a.	n.a.
51	DR-5 Product Dryer Precipitator	4.80	n.a.	18.00
52	Product Silo Top Baghouse #2	0.50	n.a.	n.a.
53	Product Silo Reclaim Baghouse #2	1.10	n.a.	n.a.
54	T-200 Product Storage Baghouse	0.19	n.a.	n.a.
55	Recycle/Reclaim Baghouse	0.40	n.a.	n.a.
62	Activated Carbon Bin Vent	0.13	n.a.	n.a.
63	Perlite Bin Vent Baghouse	0.17	n.a.	n.a.
64	Sulfite Blending #2 Baghouse	0.15	n.a.	n.a.
65	Sulfite Blending #1 Baghouse	0.06	n.a.	n.a.
66	Carbon/Perlite Additive Scrubber	0.58	n.a.	n.a.
67	Bottom Ash Baghouse	0.47	n.a.	n.a.
Total, Current Plant Sources		106.95 (468.5 TPY)	140.40 (615.0 TPY)	560.10 (2453.2 TPY)

(continued next page)

TABLE I (continued)
Solvay Minerals Soda Ash Plant Pollutant Emission Rates (pph)

Source Number	Equipment Name	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Combined Products Bagging Facility Emission Sources"			
68	Trona Silo/Bagging Machine Baghouse	0.41	n.a.	n.a.
69	Soda Ash Silo/Bagging Machine Baghouse	0.41	n.a.	n.a.
70	Sulfite Silo/Bagging Machine Baghouse	0.41	n.a.	n.a.
71	MBS Silo/Bagging Machine Baghouse	0.41	n.a.	n.a.
Subtotal, Bagging Project		1.64 (7.2 TPY)	0.00 (0.0 TPY)	0.00 (0.0 TPY)
	"Metabisulfite (MBS) Project Source Emissions"			
72	MBS Soda Ash Feed Bin Vent Filter	0.14	n.a.	n.a.
73	MBS Product Dryer	1.20	0.77	0.15
Subtotal, Calciner Changes		1.34 (5.9 TPY)	0.77 (3.4 TPY)	0.15 (0.7 TPY)
	"AQD #48 Calciner Burner Replacement"			
48	"C" Ore Calciner Precipitator {rmv}	-9.30	n.a.	-30.60
48	"C" Ore Calciner Precipitator {add}	9.30	n.a.	10.00
Subtotal, Calciner Changes		0.00 (0.0 TPY)	0.00 (0.0 TPY)	-20.60 (-90.2 TPY)
	"AQD 15# Pre-Heater Installation"			
15	DR-1 & 2 Product Dryers {rmv}	-6.80	n.a.	n.a.
15	DR-1 & 2 Product Dryers {add}	6.80	n.a.	1.20
Subtotal, Calciner Changes		0.00 (0.0 TPY)	0.00 (0.0 TPY)	1.20 (5.3 TPY)
Grand Total, Plant Emissions		109.93 (481.5 TPY)	141.17 (618.3 TPY)	540.85 (2368.9 TPY)

TABLE I

OCI Trona Plant Pollutant Emission Rates (pph)

Source Number	Equipment Name	Pollutants: Particulate	Sulfur Dioxide	Nitrogen Oxides
	"Current Plant Emission Sources"			
DC-1	Waste Soda Ash Dissolver Baghouse	0.79	n.a.	n.a.
DC-3	#2 Ore Shaft Headframe Baghouse	1.11	n.a.	n.a.
DC-4	#2 Ore Shaft Housekeeping Baghouse	0.59	n.a.	n.a.
DC-5	Units 1-4 Ore Transfer Baghouse	1.39	n.a.	n.a.
DC-6	Crusher Building Housekeeping Baghouse	1.84	n.a.	n.a.
DC-7	Crusher Building Housekeeping Baghouse	1.90	n.a.	n.a.
DC-8	Crusher Building Housekeeping Baghouse	1.33	n.a.	n.a.
DC-9	Crusher Building Housekeeping Baghouse	0.77	n.a.	n.a.
DC-10	Crusher Building Housekeeping Baghouse	2.06	n.a.	n.a.
DC-11	Units 1-2 Ore Bins Housekeeping Baghouse	0.48	n.a.	n.a.
DC-12	Units 1-2 Ore Bins Housekeeping Baghouse	1.69	n.a.	n.a.
DC-14	Units 3-4 Ore Bins Housekeeping Baghouse	0.37	n.a.	n.a.
DC-19	Unit 5 Crusher System Baghouse	0.64	n.a.	n.a.
DC-22	Product Silo 7 Vent Baghouse	0.41	n.a.	n.a.
DC-36	Unit 5 Stockpile Reclaim Baghouse	0.73	n.a.	n.a.
DC-37	#3 Ore Shaft Ore Screening Baghouse	2.00	n.a.	n.a.
DC-38	#3 Ore Shaft Headframe Baghouse	1.00	n.a.	n.a.
DC-92	Soda Ash Handling Gallery Baghouse	4.16	n.a.	n.a.
DC-93	Product Silos 1-6 Vent Baghouse	6.40	n.a.	n.a.
DC-94	Soda Ash Reclaim & Loadout Baghouse	10.00	n.a.	n.a.
DC-98	Soda Ash Reclaim & Loadout Baghouse	3.47	n.a.	n.a.
DC-100	Unit 5 Stockpile Reclaim Baghouse	1.19	n.a.	n.a.
RC-1	Unit 1 Rake Classifier Vent	0.16	n.a.	n.a.
ML-1	Unit 1 Dissolver Mill Vent	1.54	n.a.	n.a.
2RC-1	Unit 2 Rake Classifier Vent	0.04	n.a.	n.a.
2ML-1	Unit 2 Dissolver Mill Vent	2.00	n.a.	n.a.
3RC-1	Unit 3 Rake Classifier Vent	0.40	n.a.	n.a.
3ML-1	Unit 3 Dissolver Mill Vent	0.63	n.a.	n.a.
4RC-1	Unit 4 Rake Classifier Vent	0.12	n.a.	n.a.
4ML-1	Unit 4 Dissolver Mill Vent	0.92	n.a.	n.a.
5ML-1	Unit 5 Dissolver Mill Vent	0.77	n.a.	n.a.
ES-10	Unit 1&2 Ore Calciner Precipitator	30.60	n.a.	39.00
2ES-12	Unit 1&2 Soda Ash Dryer Precipitator	27.30	n.a.	5.30*
3ES-10	Unit 3 Ore Calciner Precipitator	29.20	n.a.	12.78*
3ES-12	Unit 3 Soda Ash Dryer Precipitator	34.50	n.a.	2.40*
4ES-10	Unit 3 Ore Calciner Wet Scrubber	37.70	n.a.	13.74*
4ES-12A	Unit 4 Soda Ash Dryer Wet Scrubber	37.90	n.a.	13.40
4ES-12B	Unit 4 Soda Ash Dryer Wet Scrubber	5.20	n.a.	n.a
5ES-10	Unit 5 Ore Calciner Precipitator	23.10	n.a.	5.22*
5ES-12	Unit 5 Soda Ash Dryer Precipitator	12.00	n.a.	13.65
B-3	#3 Gas Fired Steam Boiler	2.81	n.a.	21.97
B-4	#4 Gas Fired Steam Boiler	7.50	n.a.	58.65
B-5	#5 Gas Fired Steam Boiler	8.62	n.a.	67.39
B-6	#6 Gas Fired Steam Boiler	7.50	n.a.	58.65
Grand Total, Current Plant Sources		314.83	0.00	312.15
		(1379.0 TPY)	(0.0 TPY)	(1367.2 TPY)

* tested emission rate / no emission allowed for net